IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of
LARSSON et al
Serial No. 09/418,323
Filed: October 14, 1999
Title: PARTIAL RETRIEVAL OF IMAGES IN THE COMPRESSED DOMAIN

Atty Dkt. JAR-2466-41
C# M#
TC/A.U.: 2176
Examiner: C. NGUYEN
Date: June 4, 2007

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**
Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner twice/finally rejecting applicant's claim(s). $500.00 (1401)/$250.00 (2401) $

☒ **An appeal BRIEF is attached in Response to the Notification of Non-Complaint Appeal Brief dated May 3, 2007**
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☐ Credit for fees paid in prior appeal without decision on merits -$ ( )

☐ A reply brief is attached. **(no fee)**

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s)
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Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.** A duplicate copy of this sheet is attached.

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* *

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APPEAL BRIEF

Sir:

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the Examiner.

(I) REAL PARTY IN INTEREST

The real party in interest is Telefonaktiebolaget LM Ericsson, a corporation of the country of Sweden.

(II) RELATED APPEALS AND INTERFERENCES

The appellant, the undersigned, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(III) STATUS OF CLAIMS

Claims 15-32 are pending and have been rejected. No claims have been substantively allowed. The final rejection of claims 15-32 has been appealed (all claims are on appeal).

(IV) STATUS OF AMENDMENTS

No amendments have been filed since the date of the Final Rejection. However, a Request for Reconsideration filed June 2, 2005 was considered by the Examiner as indicated in the Advisory Action dated June 17, 2005.

(V) SUMMARY OF SUBJECT MATTER

This section is for purposes of example and without limitation.

For purposes of example only and without limitation, certain example embodiments of this invention relate to method and/or system for partial retrieval of images in a compressed domain. In certain example embodiments, the method and/or system involves compressing an image at a server, storing a compressed representation of the image at the server and transmitting at least part of the compressed representation of the image from the server to at least one client.

In certain example embodiments, the image is transformed into a frequency domain to form frequency domain coefficients and after the transforming, subdividing the frequency domain coefficients corresponding to the image into at least one block. Each block may include at least one transformed coefficient. The method then includes compressing, via entropy coding, at least a first block and at least a second block into different independently decodable coding units, respectively (e.g., pg. 2, lines 1-5; pg. 7, lines 4-5, 22-24). Following the compressing, at least one of the first and second coding units is stored on the server (e.g., pg. 2, lines 10-15).

Responsive to a request received at the server, the method includes transmitting from the server to at least one client the coding unit(s) corresponding to the request so that upon receiving the request the coding unit(s) corresponding to the request are transmitted to the at least one client without the server having to employ further entropy encoding with respect thereto (e.g., pg. 2, lines 16-29; pg. 3, lines 20-30; pg. 15, lines 2-11). Thus, from the point in time when a request is received for information, that information is transmitted in a compressed form *without* the server having to do any further entropy coding at to that information (e.g., pg. 15, lines 2-11). The method in certain example embodiments thus calls for in the following order: (a) sub-divide wavelet coefficients into sets, (b) compress via entropy coding, (c) store the compressed information, and (d) then, upon a request for the information is received, transmit the information to at least one client without the server having to employ further entropy coding.

Claim 15 relates to a method of compressing an image at a server, storing a compressed representation of the image at the server and transmitting at least part of the compressed representation of the image from the server to at least one client (e.g., Fig. 1), the method comprising: transforming the image into a frequency domain to form frequency domain coefficients (e.g., pg. 5, lines 10-29); after said transforming, subdividing the frequency domain coefficients corresponding to the image into at least one block, each block comprising at least one transformed coefficient (e.g., pg. 2, lines 1-5; pg. 5, lines 10-29); compressing, via entropy coding, at least a first block and at least a second block into different independently decodable coding units, respectively (e.g., pg. 2, lines 1-5; pg. 7, lines 4-5, 22-24; pg. 8, lines Fig. 4); after said compressing, storing at least one of the first and second coding units on the server (e.g., pg. 2, lines 10-15); receiving a request at said server; and responsive to the request, transmitting from the server to at least one client the coding unit(s) corresponding to the request so that upon receiving the request the coding unit(s) corresponding to the request are transmitted to the at least one client without the server having to employ further entropy encoding with respect thereto (e.g., pg. 2, lines 16-29; pg. 3, lines 20-30; pg. 15, lines 2-11).

Claim 28 client apparatus in a client-server system (e.g., Figs. 1-4), the client apparatus comprising: means (client) for identifying a region of interest of an image (e.g., pg. 2, lines 11-15; pg. 3, lines 23-25; pg. 5, lines 24-29; pg. 6, last four lines; pg. 7, lines 13-24; Fig. 2); means (corresponding structure comprises server and/or client) for identifying a mask in a transform domain corresponding to said region of interest of the image (e.g., pg. 8, lines 16-28 and last seven lines; pg. 10, lines 2-3); means (corresponding structure comprises server) for identifying at least one of a plurality of independently decodable coding units which contains at least one transform coefficient needed to reconstruct the region of interest of the image, the independently decodable coding units being defined as objects compressed by using entropy coding (e.g., pg. 8, lines 24-30; pg. 10, lines 3-8); and means (corresponding structure comprises client) for

transmitting, from the client to at least one server, a request for said at least one identified independently decodable coding unit needed to reconstruct the region of interest of the image (e.g., step 205 in Fig. Fig. 2; step 305 in Fig. 3; client requests in Figs. 5-8).

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. The rejection of claims 15-32 under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Percival (US 5,991,816) in view of Keith (US 5,966,465).

(VII) ARGUMENT

It is axiomatic that in order for a reference to anticipate a claim, it must disclose, teach or suggest each and every feature recited in the claim. See, e.g., Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983). The USPTO has the burden in this respect.

Under 35 U.S.C. § 103, the determination of obviousness is a question of law based on underlying factual inquiries. An obviousness rejection "requires the oft-difficult but critical step of casting the mind back to the time of invention." *Ecolochem, Inc. v. Southern Calif. Edison Co.*, 227 F.3d 1361, 1371 (Fed. Cir. 2000), *cert. denied,* 532 U.S. 974 (2001). Moreover, the USPTO has the burden under 35 U.S.C. Section 103 of establishing a *prima facie* case of obviousness. In re Piasecki, 745, F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). It can satisfy this burden only by showing that some objective teaching in the prior art, or that knowledge generally available to one of ordinary skill in the art, would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Before the USPTO may combine the disclosures of the references in order to establish a *prima facie* case of obviousness, there must be some suggestion for doing so. In re Jones, 958 F.2d 347 (Fed. Cir. 1992). In other words, prior art references can be combined to render an invention obvious only if there is some suggestion/motivation to combine them. *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1472 (Fed. Cir. 1997). Even assuming, *arguendo*, that a given combination of references is proper, the combination of references must in any event disclose the features of the claimed invention in order to render it obvious.

Claim 15

Claim 15 stands rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Percival in view of Keith. This Section 103(a) rejection is respectfully traversed for at least the following reasons.

Under 35 U.S.C. § 103, the determination of obviousness is a question of law based on underlying factual inquiries. An obviousness rejection "requires the oft-difficult but critical step of casting the mind back to the time of invention." *Ecolochem,* 227 F.3d at 1371. Prior art references can be combined to render an invention obvious only if there is some suggestion/motivation to combine them. *Id.* at 1372; *Motorola,* 121 F.3d at 1472. There can be no suggestion to combine if a reference "teaches away" from its combination with another source. *Tec Air, Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360-61 (Fed. Cir. 1999). Here, in this case, there is no suggestion to combine the two references as alleged in the Office Action. Moreover, the cited art teaches away from the invention of claim 15 so that there can be no suggestion as a matter of law, as will be explained below.

Claim 15 requires "storing a compressed representation of the image at the server and transmitting at least part of the compressed representation of the image from the server to at least one client, the method comprising: transforming the image into a frequency domain to form frequency domain coefficients; after said transforming, subdividing the frequency domain coefficients corresponding to the image into at least one block, each block comprising at least one transformed coefficient; *compressing*, via entropy coding, at least a first block and at least a second block into different independently decodable coding units, respectively; after said compressing, storing at least one of the first and second coding units on the server; receiving a request at said server; and responsive to the request, transmitting from the server to at least one client the coding unit(s) corresponding to the request so that ***upon receiving the request the coding units(s) corresponding to the request are transmitted to the at least one client without the server having to employ further entropy encoding with respect thereto.***"

Thus, claim 15 does not relate to compressing generally as the Office Action suggests, but instead requires compressing via entropy coding at a *very specific point* during the process. In particular, claim 15 requires that the entropy coding be performed before a request for the

information is received. Claim 15 requires that entropy coding is used, and then the compressed information is stored, so that then "upon receiving the request the coding units(s) corresponding to the request are transmitted to the at least one client *without* the server having to employ further entropy encoding with respect thereto." Thus, from the point in time when a request is received for information, that information is transmitted in a compressed form *without* the server having to do any further entropy coding at to that information. Claim 15 thus requires, in this order: (a) sub-divide wavelet coefficients into sets, (b) compress via entropy coding, (c) store the compressed information, and (d) then, upon a request for the information is received, transmit the information to at least one client without the server having to employ further entropy coding. The cited art fails to disclose or suggest this.

Percival does not divide the image into separately decodable *compressed* coding units as alleged by the Office Action. In particular, the Haar transform does not compress the image. Percival even states that the transformed coefficients take up as much memory as the original pixels (see column 6, lines 60-65). Importantly, any compression done in Percival is done *after* a request is received for that part of the image (thereby teaching away from the invention of claim 15). Since Percival teaches that compression should be done after a request for part of the image is received (the opposite of what claim 15 requires), the reference teaches away from the invention of claim 15 and there can be no suggestion or motivation in the art for the alleged combination. *Tec Air,* 192 F.3d at 1360-61.

In contrast with Percival, the method of claim 15 states that the image is stored compressed, so that the compression is done before storing and also before transmission. Percival teaches the opposite of this, because in Percival any compression is done after a request has been received. Again, Percival teaches away from the invention of claim 15, evidencing that the Section 103(a) rejection lacks merit.

Keith describes a wavelet transform followed by compression of the coefficients but does not mention sub-dividing the wavelet coefficients into sets. Thus, Keith is entirely unrelated to the invention of claim 15. Even the alleged combination would not meet the claim.

Moreover, like Percival, Keith fails to disclose or suggest that the image is stored compressed (via entropy coding), so that the compression is done *before* storing and also *before* receiving a request for the information. Both Percival and Keith fail to disclose or suggest this feature of claim 15. Moreover, there is no suggestion in the cited art to, in this order: (a) sub-divide wavelet coefficients into sets, (b) compress via entropy coding, (c) store the compressed information, and (d) then, upon a request for the information is received, transmit the information to at least one client without the server having to employ further entropy coding, as called for in claim 15. It would not have been obvious for one of ordinary skill in the art to have combined the basic concept of wavelet transforms in Keith with the Haar transform in Percival, and then add the differences and further steps mentioned above, e.g. subdividing the confidents into subbands.

Claim 28

Claim 28 requires "means for identifying at least one of a plurality of independently decodable coding units which contains at least one transform coefficient needed to reconstruct the region of interest of the image, the independently decodable coding units being defined as objects compressed by using entropy coding; and means for transmitting, from the client to at least one server, a request for said at least one identified independently decodable coding unit needed to reconstruct the region of interest of the image." Again, the cited art fails to disclose or suggest the invention of claim 28.

Percival does not use "independently decodable coding units being defined as objects compressed by using entropy coding" as required by claim 28. Percival does not divide the image into separately decodable *compressed* coding units as alleged by the Office Action. In

particular, the Haar transform in Percival does not compress the image. Percival even states that the transformed coefficients take up as much memory as the original pixels (see column 6, lines 60-65). Importantly, any compression done in Percival is done *after* a request is received for that part of the image (thereby teaching away from the invention of claim 28). Since Percival teaches that compression should be done after a request for part of the image is received (the opposite of what claim 15 requires), the reference teaches away from the invention of claim 28 and there can be no suggestion or motivation in the art for the alleged combination. *Tec Air,* 192 F.3d at 1360-61.

Citation to Keith cannot cure the flaws of Percival with respect to claim 28. Like Percival, Keith fails to disclose or suggest that the image is stored compressed (via entropy coding), so that the compression is done *before* storing and also *before* receiving a request for the information. Since both Percival and Keith fail to disclose or suggest the aforesaid underlined features of claim 28, even the alleged combination (which would be incorrect in any event) fails to meet the invention of claim 28.

CONCLUSION

In conclusion it is believed that the application is in clear condition for allowance; therefore, early reversal of the Final Rejection and passage of the subject application to issue are earnestly solicited.

Respectfully submitted,

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(VIII) CLAIMS APPENDIX

1-14. (Canceled)

15. A method of compressing an image at a server, storing a compressed representation of the image at the server and transmitting at least part of the compressed representation of the image from the server to at least one client, the method comprising:

transforming the image into a frequency domain to form frequency domain coefficients;

after said transforming, subdividing the frequency domain coefficients corresponding to the image into at least one block, each block comprising at least one transformed coefficient;

compressing, via entropy coding, at least a first block and at least a second block into different independently decodable coding units, respectively;

after said compressing, storing at least one of the first and second coding units on the server;

receiving a request at said server; and

responsive to the request, transmitting from the server to at least one client the coding unit(s) corresponding to the request so that upon receiving the request the coding unit(s) corresponding to the request are transmitted to the at least one client without the server having to employ further entropy encoding with respect thereto.

16. The method of claim 15, wherein the request describes at least one region of interest of the image, wherein the server identifies which of stored coding units contain information transformed coefficients needed to reconstruct said region of interest, and the server transmits the identified coding unit(s) needed to reconstruct the region of interest to the at least one client.

17. The method of claim 15, wherein the request defines at least one coding unit, and the server transmits the at least one coding unit that is defined in the request to the at least one client.

18. The method of claim 15, wherein the request contains information identifying region(s) of less interest of the image that the at least one client does not want to receive.

19. The method of claim 16, wherein the region of interest is defined by a mask in the transform domain.

20. The method of claim 18, wherein the region(s) of less interest is defined by a mask in the transform domain.

21. The method of claim 15, wherein the request comprises information identifying at least one coding unit that the at least one client does not want to receive.

22. The method of claim 15, wherein, in response to the request, the server only transmits coding units that have not already been transmitted to the at least one client.

23. The method of claim 15, wherein the request defines at least one coding unit, and the server only transmits in response to the request coding units that have not already been transmitted to the at least one client.

24. The method of claim 15, wherein the image is transformed into the frequency domain using at least a wavelet transform.

25. The method of claim 15, wherein the blocks are arbitrarily shaped blocks.

26. The method of claim 15, wherein the image is quantized.

27. A server apparatus performing the steps recited in claim 15.

28. A client apparatus in a client-server system, the client apparatus comprising:

means for identifying a region of interest of an image;

means for identifying a mask in a transform domain corresponding to said region of interest of the image;

means for identifying at least one of a plurality of independently decodable coding units which contains at least one transform coefficient needed to reconstruct the region of interest of the image, the independently decodable coding units being defined as objects compressed by using entropy coding; and

means for transmitting, from the client to at least one server, a request for said at least one identified independently decodable coding unit needed to reconstruct the region of interest of the image.

29. The apparatus of claim 28, wherein the request further contains information defining at least one coding unit that the client does not want to receive.

30. The apparatus of claim 28, wherein the request contains information concerning a region of less interest of the image that the client does not want to receive.

31. The apparatus of claim 30, wherein the region of less interest is defined by a mask in the transform domain.

32. The apparatus of claim 28, further comprising means for compressing, via entropy coding, at least a first block and at least a second block into different independently decodable coding units, respectively;

means for, after said compressing, storing at least one of the first and second coding units on the server, and responsive to a request, transmitting from the server to at least one client the coding unit(s) corresponding to the request so that upon receiving the request the coding unit(s) corresponding to the request are transmitted to the at least one client without the server having to employ further entropy encoding with respect thereto.

(IX) EVIDENCE APPENDIX

None

(X) RELATED PROCEEDINGS APPENDIX

The appellant, the signatory of this document, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.